

21/12/23

WEEK 2

Program #1: WAP that prints all real solutions to the quadratic equation $ax^2+bx+c=0$. read in a, b, c and use the quadratic formula. If the discriminant b^2-4ac is negative, display a message stating that there are no real solutions.

```
import java.util.*;
```

```
public class Quad
```

```
{
```

```
    public static void main(String args[])
```

```
{
```

```
    float a, b, c, d, r1, r2;
```

```
    System.out.println ("Enter a, b, c : ");
```

```
    Quad obj = new Quad(); Scanner read = new Scanner (System.in);
```

```
    a = readobj.nextFloat();
```

```
    b = readobj.nextFloat();
```

```
    c = readobj.nextFloat();
```

```
    d = 0.0f;
```

```
    r1 = 0.0f;
```

```
    r2 = 0.0f;
```

```
    if (a == 0 || b == 0 || c == 0)
```

```
{
```

```
        System.out.println ("Invalid input");
```

```
}
```

```
else
```

```
{
```

```
    d = b*b - 4*a*c;
```

```
    if (d > 0)
```

```
{
```

```
        r1 = (float)(-b + Math.sqrt(d)) / (2*a);
```

```
        r2 = (float)(-b - Math.sqrt(d)) / (2*a);
```

```
        System.out.println ("Roots are real and distinct in  
R1 = " + r1 + " R2 = " + r2);
```

```
}
```

```
else if (d < 0)
```

```
{
```

```
System.out.println ("Roots are imaginary");
```

```
}
```

```
else
```

```
{
```

```
    r1 = -b / (2 * a);
```

```
    r2 = r1;
```

```
    System.out.println ("Roots are equal in R1 = " + r1 +  
                          " & R2 = " + r2);
```

```
}
```

```
}
```

```
}
```


Output:-

(iii) Enter values of a, b, c :

21

38

15

Roots are real and distinct

$$R1 = -0.58179384$$

$$R2 = -1.22773$$

(iv) Enter values of a, b, c :

10

0

12

Invalid input

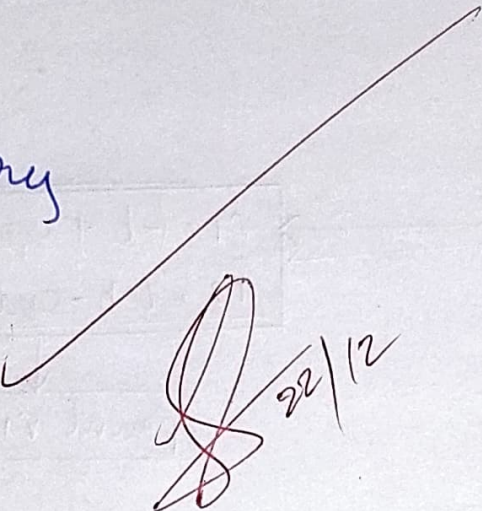
(v) Enter values of a, b, c :

2

1

2

Roots are imaginary

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```
C:\Users\BMSCE\Desktop\1BMSSCS014>javac QuadEq.java
```

```
C:\Users\BMSCE\Desktop\1BMSSCS014>java QuadEq
```

```
Enter values of a, b, c:
```

```
2
```

```
1
```

```
2
```

```
Roots are imaginary
```

```
Name: Aditi C
```

```
USN: 1BM22CS014
```

```
C:\Users\BMSCE\Desktop\1BMSSCS014>javac QuadEq.java
```

```
C:\Users\BMSCE\Desktop\1BMSSCS014>java QuadEq
```

```
Enter values of a, b, c:
```

```
1
```

```
6
```

```
1
```

```
Roots are real and distinct
```

```
R1= -0.17157288 R2= -5.8284273
```

```
Name: Aditi C
```

```
USN: 1BM22CS014
```

```
C:\Users\BMSCE\Desktop\1BMSSCS014>javac QuadEq.java
```

```
C:\Users\BMSCE\Desktop\1BMSSCS014>java QuadEq
```

```
Enter values of a, b, c:
```

```
10
```

```
0
```

```
12
```

```
Invalid Input
```

```
Name: Aditi C
```

```
USN: 1BM22CS014
```

```
C:\Users\BMSCE\Desktop\1BMSSCS014>javac QuadEq.java
```

```
C:\Users\BMSCE\Desktop\1BMSSCS014>java QuadEq
```

```
Enter values of a, b, c:
```

```
1
```

```
2
```

```
1
```

```
Roots are real and equal
```

```
R1= -1.0      R2= -1.0
```

```
Name: Aditi C
```

```
USN: 1BM22CS014
```

```
C:\Users\BMSCE\Desktop\1BMSSCS014>javac QuadEq.java
```

```
C:\Users\BMSCE\Desktop\1BMSSCS014>java QuadEq
```

```
Enter values of a, b, c:
```

```
21
```

```
38
```

```
15
```

```
Roots are real and distinct
```

```
R1= -0.58179384 R2= -1.22773
```

```
Name: Aditi C
```

```
USN: 1BM22CS014
```